

REMARKS

Claims 1-20 are pending, however, claims 17-20 have been withdrawn from consideration. Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

I. REJECTION OF CLAIMS 1-3 AND 8-10 UNDER 35 U.S.C. § 103(a)

Claims 1-3 and 8-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,713,359 (Mizushima et al.) in view of applicant's admitted prior art (AAPA). Withdrawal of the rejection is respectfully requested for at least the following reasons.

Claim 1 is directed to a method of forming a MOSFET, and comprises forming a silicon-germanium layer in source and drain regions ***in the substrate***. Further, a gate region is provided over a channel region of the substrate. Accordingly, the gate region resides over the substrate according to the claimed invention. Please note that as defined in applicant's specification, for example, on page 5, lines 19-25, "in the substrate" means either formed in the original semiconductor body or as an additional epitaxial layer formed over a bulk semiconductor body prior to forming the gate oxide/gate electrode stack thereover. Further, as set forth in the specification, for example, on page 5, lines 16-18, the gate region 112 is formed outwardly from the substrate 102 and thus resides over the substrate.

Mizushima et al. do not teach a silicon-germanium layer in source and drain regions ***in the substrate*** as claimed. Rather the cited art forms a silicon-germanium layer 18 over source and drain areas 15 of the substrate 11, and consequently the silicon-germanium layer 18 is adjacent the gate oxide 13 that also overlies the substrate 11. (See, e.g., Fig. 2A and Col. 6, lines 20-22). Thus Mizushima et al. form a silicon-germanium layer 18 ***over a substrate 11, next to the gate electrode/gate oxide stack***, and use the layer as a seed layer for growing a polycrystalline silicon film 19 thereover. (See, e.g., Col. 2, lns. 40-48). The polysilicon/silicon-germanium bi-layer is then used to prevent channeling in the substrate during a subsequent implantation in

order to form source/drain regions 21, 22 in the areas 15. (See, e.g., Col. 2, Ins. 51-57). Because the cited reference does not teach a silicon-germanium layer in the substrate as claimed, the cited art fails to render obvious the claimed invention. Accordingly, withdrawal of the rejection is respectfully requested.

II. REJECTION OF CLAIMS 12-13 AND 15-16 UNDER 35 U.S.C. § 103(a)

Claims 12-13 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizushima et al. Withdrawal of the rejection is respectfully requested for at least the following reasons.

Claim 12 recites a method of forming a MOSFET device comprising forming an epitaxial silicon-germanium layer in source and drain regions ***in the substrate***. As stated above, Mizushima et al. do not teach a silicon-germanium layer in the substrate as claimed, but instead form such a layer ***over the substrate***. Therefore the cited art fails to render obvious the claimed invention. Accordingly, withdrawal of the rejection is respectfully requested.

III. REJECTION OF CLAIMS 1 AND 11 UNDER 35 U.S.C. § 103(a)

Claims 1 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,124,627 (Rodder et al.) in view of applicant's admitted prior art (AAPA). Withdrawal of the rejection is respectfully requested for at least the following reasons.

As stated above, claim 1 recites a method of forming a MOSFET, and comprises forming a silicon-germanium layer in source and drain regions ***in the substrate***. Rodder et al. do not teach this feature. Rather ***Rodder et al. form a silicon-germanium layer 106a over the substrate, next to the gate electrode/gate oxide stack, rather than in the substrate 102 as claimed***. Further, one of ordinary skill in the art would not have been motivated to modify Rodder et al. in accordance with the present invention because Rodder et al. employ the silicon-germanium layer 106a as a barrier layer to prevent dopant from reaching the substrate. (See, e.g., Col. 4, Ins. 43-

48). Therefore Rodder et al. fail to render obvious the invention of claim 1, as well as the associated depending claims. Accordingly, withdrawal of the rejection is respectfully requested.

IV. REJECTION OF CLAIMS 4-5 AND 8-10 UNDER 35 U.S.C. § 103(a)

Claims 4-5 and 8-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodder et al. in view of AAPA and U.S. Patent No. 5,872,039 (Imai). Withdrawal of the rejection is respectfully requested for at least the following reasons.

As stated above, Rodder et al. do not teach the features of claim 1 because the silicon-germanium layer associated therewith is not formed in the substrate as recited in the present invention. The secondary references do not remedy the deficiencies in Rodder et al. Therefore claims 4-5 and 8-10 are also non-obvious over the cited art. Accordingly, withdrawal of the rejection is respectfully requested.

V. REJECTION OF CLAIMS 12-16 UNDER 35 U.S.C. § 103(a)

Claims 12-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodder et al. in view of Imai. Withdrawal of the rejection is respectfully requested for at least the following reasons.

Claim 12 recites forming a silicon-germanium epitaxial layer *in the substrate*. As highlighted above, Rodder et al. do not teach this feature because the silicon-germanium layer associated therewith is not formed in the substrate as recited in the present invention. The secondary reference does not remedy the deficiencies in Rodder et al. Therefore claims 12-16 are also non-obvious over the cited art. Accordingly, withdrawal of the rejection is respectfully requested.


VI. CONCLUSION

For at least the above reasons, the claims currently under consideration are believed to be in condition for allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account Number 20-0668, TI-36658.

Respectfully submitted,
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CERTIFICATE OF MAILING (37 CFR 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Assistant Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: January 25, 2006


Christine Gillroy